

## EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	1	("5535593").PN.	USPAT; USOCR	OR	OFF	2006/06/22 13:04
S2	1	("5245830").PN.	USPAT; USOCR	OR	OFF	2006/06/14 11:06
S3	1273	(62/6).CCLS.	USPAT; USOCR	OR	OFF	2006/06/20 11:31
S4	12	("5156005"   "5167124"   "5245830").PN. OR ("5535593").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/06/14 15:04
S5	1273	(62/6).CCLS.	USPAT; USOCR	OR	OFF	2006/11/07 11:21
S6	258	S5 free piston	USPAT	AND	ON	2006/06/15 11:58
S7	684	cryocooler	USPAT	AND	ON	2006/06/15 11:58
S8	51	S7 S6	USPAT	AND	ON	2006/06/16 12:25
S9	28	("3802211"   "4373663"   "4417448"   "4534176"   "4543793"   "4545209"   "4642547"   "4664685"   "4675563"   "4761960"   "4783968"   "4925089").PN. OR ("5018357").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/06/15 12:28
S10	688	(62/228.1).CCLS.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/06/15 12:28
S11	428	(60/520).CCLS.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/06/15 12:29
S13	1273	(62/6).CCLS.	USPAT; USOCR	OR	OFF	2006/06/16 10:30
S14	124728	free piston	US-PGPUB; USPAT	AND	ON	2006/06/16 10:31
S15	269094	temperature with control	US-PGPUB; USPAT	AND	ON	2006/06/16 10:31
S16	48	S13 S14 S15	US-PGPUB; USPAT	AND	ON	2006/06/16 10:31
S17	1273	(62/6).CCLS.	USPAT; USOCR	OR	OFF	2006/06/16 12:25
S18	258	S17 free piston	USPAT	AND	ON	2006/06/16 12:25
S19	684	cryocooler	USPAT	AND	ON	2006/06/16 12:25
S20	51	S19 S18	USPAT	AND	ON	2006/06/16 12:25
S21	269094	temperature with control	US-PGPUB; USPAT	AND	ON	2006/06/16 12:25
S22	12	S20 S21	USPAT	AND	ON	2006/06/16 12:27

## EAST Search History

S23	2	("3220201").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/06/16 12:29
S24	25	("4417448"   "4620143"   "4628475"). PN. OR ("5156005").URPN.	US-PGPUB; USPAT; USOCR	AND	ON	2006/06/16 12:31
S25	12	("5156005"   "5167124"   "5245830"). PN. OR ("5535593").URPN.	US-PGPUB; USPAT; USOCR	AND	ON	2006/06/16 12:36
S26	1273	(62/6).CCLS.	USPAT; USOCR	OR	OFF	2006/06/20 16:29
S27	124728	free piston	US-PGPUB; USPAT	AND	ON	2006/06/16 15:40
S28	269094	temperature with control	US-PGPUB; USPAT	AND	ON	2006/06/16 15:40
S29	48	S26 S27 S28	US-PGPUB; USPAT	AND	ON	2006/06/16 15:41
S33	87	free piston temperature with control	EPO; JPO; DERWENT	AND	ON	2006/06/16 15:43
S34	1273	(62/6).CCLS.	USPAT; USOCR	OR	OFF	2006/06/19 16:00
S35	258	S34 free piston	USPAT	AND	ON	2006/06/19 16:00
S36	102	S35 gas bearing	US-PGPUB; USPAT	AND	ON	2006/06/19 16:01
S37	22	S36 lubrication	US-PGPUB; USPAT	AND	ON	2006/11/07 11:57
S38	1276	(62/6).CCLS.	USPAT; USOCR	OR	OFF	2006/06/20 11:34
S42	1	S38 cold near heater	US-PGPUB; USPAT	AND	ON	2006/06/20 13:01
S43	25	("4417448"   "4620143"   "4628475"). PN. OR ("5156005").URPN.	US-PGPUB; USPAT; USOCR	AND	ON	2006/06/20 15:59
S45	50068	refrigeration	US-PGPUB; USPAT	AND	ON	2006/06/20 16:29
S46	212702	heater	US-PGPUB; USPAT	AND	ON	2006/06/20 16:30
S47	1825777	temperature	US-PGPUB; USPAT	AND	ON	2006/12/14 11:10
S48	2653528	control	US-PGPUB; USPAT	AND	ON	2006/06/20 16:30
S49	7176	S45 S46 S47 S48	US-PGPUB; USPAT	AND	ON	2006/06/20 16:30
S50	24864	cryogenic	US-PGPUB; USPAT	AND	ON	2006/06/20 16:32

## EAST Search History

S51	914	S49 S50'	US-PGPUB; USPAT	AND	ON	2006/06/20 16:31
S53	233	pulse tube S51	US-PGPUB; USPAT	AND	ON	2006/06/20 16:33
S54	1276	(62/6).CCLS.	USPAT; USOCR	OR	OFF	2006/06/22 09:17
S55	258	S54 free piston	USPAT	AND	ON	2006/06/22 09:17
S56	102	S55 gas bearing	US-PGPUB; USPAT	AND	ON	2006/06/22 09:17
S57	62	S56 control	US-PGPUB; USPAT	AND	ON	2006/06/22 09:48
S58	41	S55 gas with bearing	US-PGPUB; USPAT	AND	ON	2006/06/22 09:49
S59	23	S58 control	US-PGPUB; USPAT	AND	ON	2006/06/22 09:49
S60	1	("4408456").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/06/22 11:33
S61	1	("4389849").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/06/22 11:33
S62	253	(62/192).CCLS.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/06/22 12:43
S65	19979	gas with bearing	US-PGPUB; USPAT	AND	ON	2006/11/16 14:47
S66	3	S65 S62	US-PGPUB; USPAT	AND	ON	2006/06/22 12:48
S67	225	(62/193).CCLS.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/06/22 13:01
S70	487	(62/226).CCLS.	USPAT; USOCR	OR	OFF	2006/06/22 13:04
S73	4810	stirling	US-PGPUB; USPAT	AND	ON	2006/06/22 13:07
S74	2	S73 S70	US-PGPUB; USPAT	AND	ON	2006/06/22 13:20
S76	689	(62/228.1).CCLS.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/06/22 13:21
S78	11	S76 S73	US-PGPUB; USPAT	AND	ON	2006/06/22 13:22
S79	5	S76 free with piston	US-PGPUB; USPAT	AND	ON	2006/06/22 13:22

## EAST Search History

S80	0	S70 free with piston	US-PGPUB; USPAT	AND	ON	2006/06/22 13:23
S81	14	S70 piston control	US-PGPUB; USPAT	AND	ON	2006/06/22 13:23
S82	81	S76 piston control	US-PGPUB; USPAT	AND	ON	2006/06/22 13:23
S83	34	("3610782"   "3916271"   "4027211"   "4567726"   "4706470"   "4893479"). PN. OR ("5032772").URPN.	US-PGPUB; USPAT; USOCR	AND	ON	2006/06/22 13:23
S84	2	((("3991586") or ("4417448"))).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/06/22 15:44
S85	1276	(62/6).CCLS.	USPAT; USOCR	OR	OFF	2006/06/23 14:59
S87	127	S85 heater	US-PGPUB; USPAT	AND	ON	2006/06/23 15:00
S88	83	S87 control	US-PGPUB; USPAT	AND	ON	2006/06/23 15:24
S89	40	S88 cryogenic	US-PGPUB; USPAT	AND	ON	2006/06/23 15:25
S90	1	("3788088").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/06/30 14:07
S91	1276	(62/6).CCLS.	USPAT; USOCR	OR	OFF	2006/07/05 08:04
S92	258	S91 free piston	USPAT	AND	ON	2006/07/05 08:04
S93	684	cryocooler	USPAT	AND	ON	2006/07/05 08:04
S94	51	S93 S92	USPAT	AND	ON	2006/07/05 08:04
S95	20	limit S94	US-PGPUB; USPAT	AND	ON	2006/07/05 08:19
S96	29	design S94	US-PGPUB; USPAT	AND	ON	2006/07/05 08:19
S97	1285	(62/6).CCLS.	USPAT; USOCR	OR	OFF	2006/11/07 11:21
S98	1285	S97	US-PGPUB; USPAT; USOCR	AND	ON	2006/11/07 11:21
S99	2111	minimum piston stroke heater	US-PGPUB; USPAT	AND	ON	2006/11/07 11:57
S10 0	17	S99 S97	US-PGPUB; USPAT	AND	ON	2006/11/07 11:57

## EAST Search History

S10 1	23	("3991586"   "4350012"   "4610143"   "4783968"   "4819439"   "4822390"   "4872313"   "4912929"   "5022229"   "5032772"   "5088288"   "5090206"   "5113662"   "5177971").PN. OR ("5385021").URPN.	US-PGPUB; USPAT; USOCR	AND	ON	2006/11/07 12:32
S10 2	38	("4369398"   "4413950"   "4433279"   "4642547"   "4646014"   "4739264"   "4778353"   "4808918"   "4856280"   "4857842"   "4875011"   "4907435"   "4994731"   "5028868"   "5260614"   "5315190"   "5385021"   "5522214"   "5537820"   "5582013"   "5642618"   "5654951"   "5743091").PN. OR ("6094912").URPN.	US-PGPUB; USPAT; USOCR	AND	ON	2006/11/07 13:35
S10 3	20634	gas with bearing	US-PGPUB; USPAT	AND	ON	2006/11/16 14:47
S10 5	1900165	temperature	US-PGPUB; USPAT	AND	ON	2006/11/16 14:47
S10 7	2781853	control	US-PGPUB; USPAT	AND	ON	2006/11/16 14:47
S10 8	2484300	temperature	US-PGPUB; USPAT; USOCR	AND	ON	2006/11/16 14:49
S10 9	3537308	control	US-PGPUB; USPAT; USOCR	AND	ON	2006/11/16 14:49
S11 0	506072	piston	US-PGPUB; USPAT; USOCR	AND	ON	2006/11/16 14:49
S11 1	3277254	limit   minimum	US-PGPUB; USPAT; USOCR	AND	ON	2006/11/16 15:23
S11 2	376545	stroke	US-PGPUB; USPAT; USOCR	AND	ON	2006/11/16 15:04
S11 3	9548	gas near bearing   (clearance near seal)	US-PGPUB; USPAT; USOCR	AND	ON	2006/11/16 15:22
S11 4	200	S108 S109 S110 S111 S112 S113	US-PGPUB; USPAT; USOCR	AND	ON	2006/11/16 15:24
S11 5	7	"6161389"	US-PGPUB; USPAT; USOCR; EPO	AND	ON	2006/11/20 10:37
S11 6	1289	(62/6).CCLS.	USPAT; USOCR	OR	OFF	2006/12/14 11:07

## EAST Search History

S11 7	1913569	temperature	US-PGPUB; USPAT	AND	ON	2006/12/14 11:11
S11 8	2804752	control	US-PGPUB; USPAT	AND	ON	2006/12/14 11:11
S11 9	396	S116 S117 S118	US-PGPUB; USPAT	AND	ON	2006/12/14 11:11
S12 0	222371	heater	US-PGPUB; USPAT	AND	ON	2006/12/14 11:12
S12 1	77	S120 S119	US-PGPUB; USPAT	AND	ON	2006/12/14 11:12